



THE SMART CONNECTED WASTE SORTING CONTAINER



INCREASING WASTE SORTING BY REWARDING CITIZENS

At the crossroads of the Internet of the Things and the collaborative economy, Terradona is revolutionising waste sorting with Ciiink, an interactive solution that gives everyone the opportunity to get involved: local authorities, citizens and retailers (see diagram on next page).

Following feasibility studies conducted in March 2014, prototyping in October 2014, and piloting the pre-industrial model in September 2015; the last phases consisted of a large-scale test with 70 smart containers in the Aix-Marseille Provence metropolitan area for one year (ending in March 2017).

INNOVATIONS

► Terradona (www.terradona.com) offers a unique solution (3 patents in collaboration with CEA LETI) to help smart cities increase waste sorting while also reducing costs for local authorities. The technology is able to characterise the nature of the waste on the fly (glass) like traditional waste sorting machines but in smaller spaces, hostile environments (e.g. with high levels of soiling, high temperature ranges, high pressure cleaning, strong shaking in the emptying phase, etc.) and with energy autonomy constraints. Moreover, the system can be simply 'plugged into' the waste container rather like a set top box is connected to the TV. In just 15 minutes, 20th century sorting containers turn into smart and connected urban hardware able to reward responsible citizens (www.ciiink.com) as well as providing real-time collection data to the local authority in order to reduce costs.

► Basically, it turns a boring everyday chore into a smart, fun and rewarding behaviour.

KEY DATA

- From evidence to action
 - 5 billion inhabitants will live in cities in 2030
 - Waste is the third biggest source of pollution
 - Recycled waste can become a resource
- In France
 - 56% of the French population do not sort waste or only occasionally
 - 70% of packaging is not recycled in cities
 - 300,000 waste sorting containers have been installed in the city
- Ciiink impact
 - €300 K/year reduction in costs / 100,000 inhabitants.
 - 750 t/year fewer CO₂ emissions for / 100,000 inhabitants.
 - €90 / increase in purchasing power per household
 - Improving local businesses due to increased traffic and turnover

STAKEHOLDERS

► A testing agreement was ratified between the Aix-Marseille metropolitan area and Terradona to test the technology under real conditions with the participation of EUROMED, Eco-Emballages, the Bouches du Rhône Département, the Provence Alpes Côte d'Azur region and ADEME.

► This large-scale test will be used as the basis for wide scale deployment in France and Europe by local authorities, metropolitan areas and EPCIs (public inter-municipality cooperation establishments).

IMPLEMENTATION

- **1.** An R&D partnership was formed with CEA Leti to study the feasibility of designing an on-board system able to characterise materials in a hostile environment without posing any risks or drawbacks for the user. Three design firms were involved in developing the electronic, mechanical and software aspects. The R&D costs (€700 K) were partly self-funded but mainly financed by IPO contributions.
- **2.** A testing agreement was validated by the metropolitan area of Aix Marseille to pilot the solution under real conditions i.e. 40,000 inhabitants, living both vertically and horizontally, with a representative sample of diverse socio-professional categories. Cost of €500 K.
- **3.** Schedule: Feasibility, prototyping, demonstrator, piloting, large-scale testing, and industrialisation.



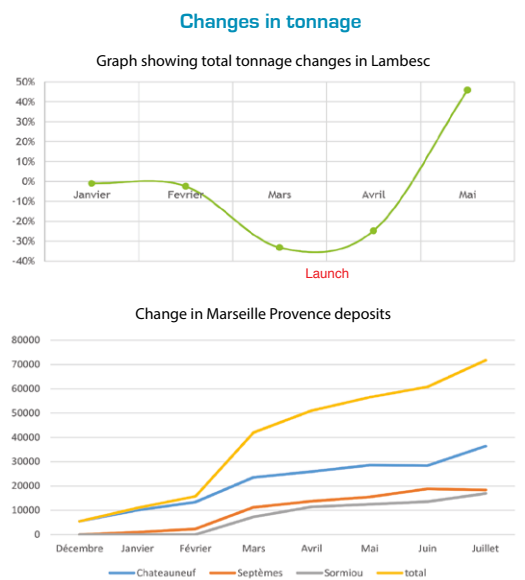
RESULTS

/// Results

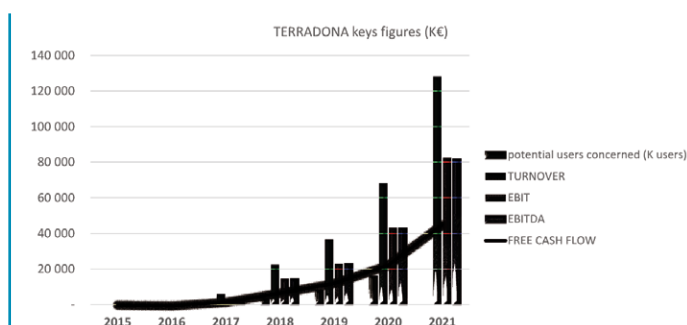
1. Increase of 10 % to 30% in terms of selective waste sorting depending on the sector
2. Reduction in costs (source: Eco-Emballages)
 - a. 1 ton of unsorted glass costs €171
 - b. 1 ton of sorted glass costs €68 → Gap: €103/ton saved
3. Optimised selective collection: €16/ton saved
4. 1 ton of sorted glass saves 700 kg of sand, 500 litres of water and reduces CO₂ emissions by 500 kg
5. Improves business for local retailers: 50% of shops report 1 to 3 extra sales a month
6. Increase in purchasing power: €90/year per household

/// Awards

CNRFID & GEMALTO prize in the contactless challenge, Captronic prize for innovative start-ups, RSE PACA prize, Pole Solutions innovation prize for secure communication solutions, Embedded France prize for on-board sensors, 1st prize in the Métha Europe competition, winner of the Réseau Entreprendre, winner of the Pays d'Aix Initiative, winner of the France Initiative, and winner of the Tremplin de la Provence.



FINANCIAL ASPECT OF THE OPERATION



- 70 pilot systems
- €1 M of R&D
- 3 patents registered
- 5 people employed
- + €400 K of funding already secured
- €2 M being raised
- 1st commercialisation planned for October 2016
- Industrialisation i.e. 1st deliveries planned for 2017